Agenda

Welcome	Dan Dumbacher, NASA Deputy Associate Administrator for Exploration Systems Human Exploration and Operations Mission Directorate
SLS Program Overview	Todd May, SLS Program Manager Marshall Space Flight Center
NRA Intent and Schedule	Chris Crumbly, Chairperson Marshall Space Flight Center
NRA Summary	Chris Crumbly, Chairperson
Break	All
NRA Model Contract	Kellie Craig, Contracting Officer Marshall Space Flight Center
Questions and Answers	All
Networking	All

National Aeronautics and Space Administration

Space Launch System (SLS) Program Overview
NASA Research Announcement (NRA) Advanced Booster (AB) Engineering Demonstration and Risk Reduction (EDRR) Industry Day

Space Launch System

Todd A. May, SLS Program Manager
NASA Marshall Space Flight Center
December 15, 2011

NASA Authorization Act of 2010

- **The Congress approved and the President signed the National Aeronautics and Space Administration Authorization Act of 2010.**
  - Bipartisan support for human exploration beyond low-Earth orbit (LEO)

- **The Law authorizes:**
  - Extension of the International Space Station (ISS) until at least 2020
  - Strong support for a commercial space transportation industry
  - **Development of Orion Multi-Purpose Crew Vehicle (MPCV) and heavy lift launch capabilities**
  - A "flexible path" approach to space exploration, opening up vast opportunities including near-Earth asteroids and Mars
  - New space technology investments **to increase the capabilities beyond Earth orbit (BEO)**

This rocket is key to implementing the plan laid out by President Obama and Congress in the bipartisan 2010 NASA Authorization Act.
— NASA Administrator Charles Bolden
September 14, 2011

Delivering on the Laws of the Land … and Obeying the Laws of Physics

SLS Is a National Asset for Multiple Stakeholders and Partners

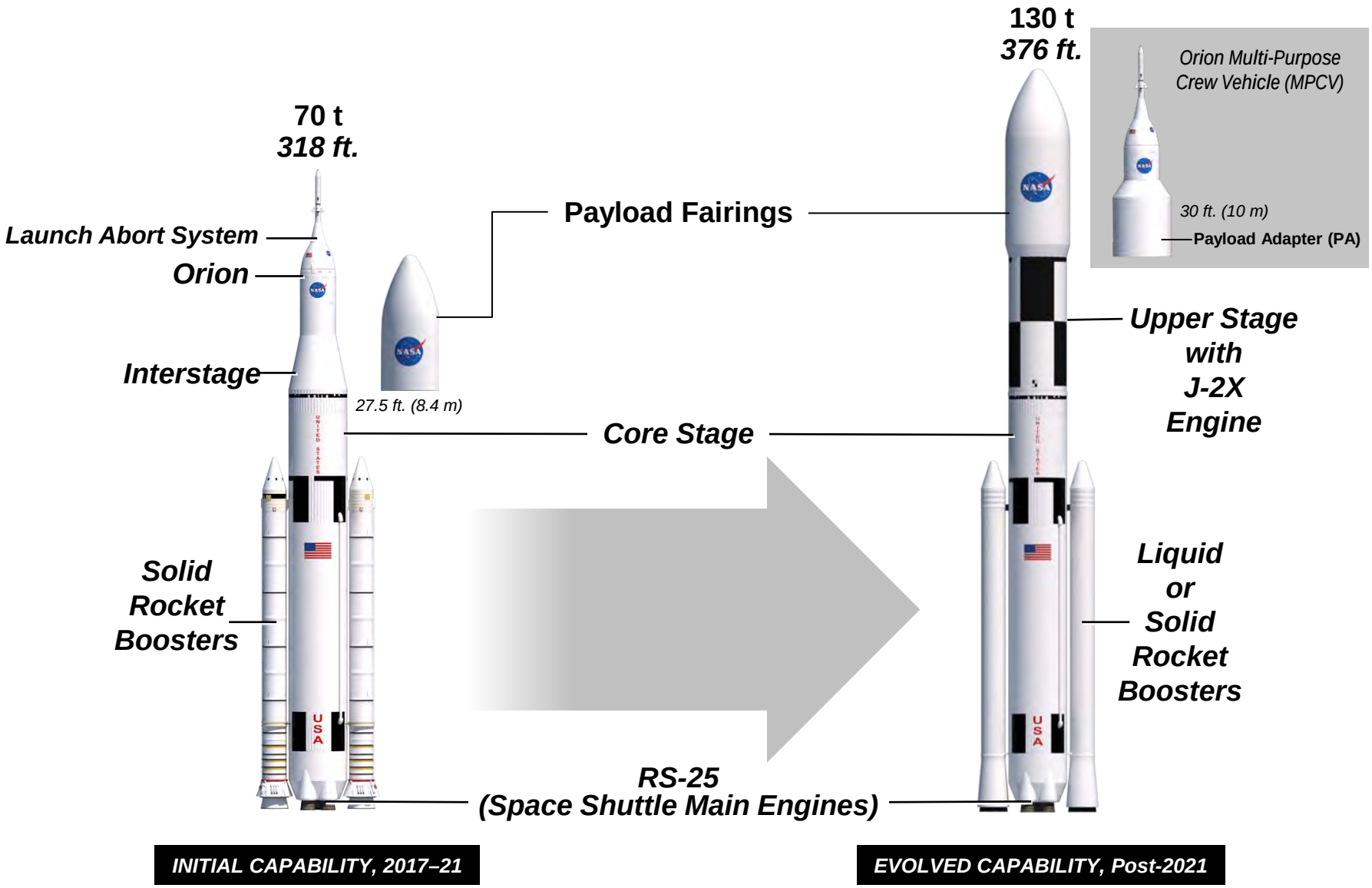
SLS — Going Beyond Earth's Orbit

SLS Driving Objectives

- **Safe: Human-Rated**
- **Affordable**
  - Constrained budget environment
  - Maximum use of common elements and existing assets, infrastructure, and workforce
  - Competitive opportunities for affordability on-ramps
- **Initial capability: 70 metric tons (t), 2017–2021**
  - Serves as primary transportation for Orion and exploration missions
  - Provides back-up capability for crew/cargo to ISS
- **Evolved capability: 130 t, post–2021**
  - Offers large volume for science missions and payloads
  - Modular and flexible, right-sized for mission requirements

SLS First Flight in 2017

SLS Architecture Uses Existing and Advanced Technologies to Fly in 2017



Built in the U.S.A.

SLS Maximizes U.S. Aerospace Workforce and Capabilities

- **Boosters (3-phased approach)**
  - Phase I: 5-segment Solid Rocket Booster in-scope modification to existing Ares contract with ATK for initial flights through 2021
  - Phases II and III: Advanced Boosters
    - II: Engineering demonstration and risk reduction via NASA Research Announcement (NRA): Full and Open Competition in FY12; award by FY13
    - III: Design, Develop, Test, & Evaluation (DDT&E): Full and Open Competition (RFP target FY15)
- **Stages**
  - Core/Upper Stage: Justification for Other Than Full and Open Competition (JOFOC) to Boeing, modifying current Ares Upper Stage contract
  - Instrument Unit Avionics: In-scope modification to existing Ares contract with Boeing; consolidated with Stages contract to Boeing
- **Engines**
  - Core Stage Engine: RS-25 JOFOC to existing Space Shuttle contract with Pratt & Whitney Rocketdyne (PWR)
  - Upper Stage Engine: J-2X in-scope modification to existing Ares contract with PWR
  - Future Core Stage Engine: Separate contract activity to be held in the future
- **Spacecraft and Payload adapter and Fairing**
  - Initial design:
    - Adapter and Fairing design and development in-house through early design phase
  - Fairing Full and Open Competition planned for FY13

INITIAL

EVOLVED

Delivers Near-Term Initial Capabilities and Spurs Competition for Evolved Capabilities

Three-Phase Booster Development Approach

Booster Fly-out for Early Flights through 2021

- Scope: Build two 5-segment SRB Flight Sets
- Date: In progress
- Capability: Initial 70–100 t
- Contract: Mod to Ares contract with ATK

Full and Open Competition

Advanced Booster Engineering Demonstration And/Or Risk Reduction NRA

- Scope: Award contracts that reduce risks leading to an affordable Advanced Booster that meets the evolved capabilities of SLS and enable competition by mitigating targeted Advanced Booster risks to enhance SLS affordability
- Date: ***Issue draft NRA Dec 12, 2011; award targeted for Oct 1, 2012***
- Capability: Leading to 130 t
- Contract: NRA Demonstrating Specific Technologies and Affordability Risk Reduction for Advanced Boosters
  - Liquid Rocket Boosters or Solid Rocket Boosters

Full and Open Competition

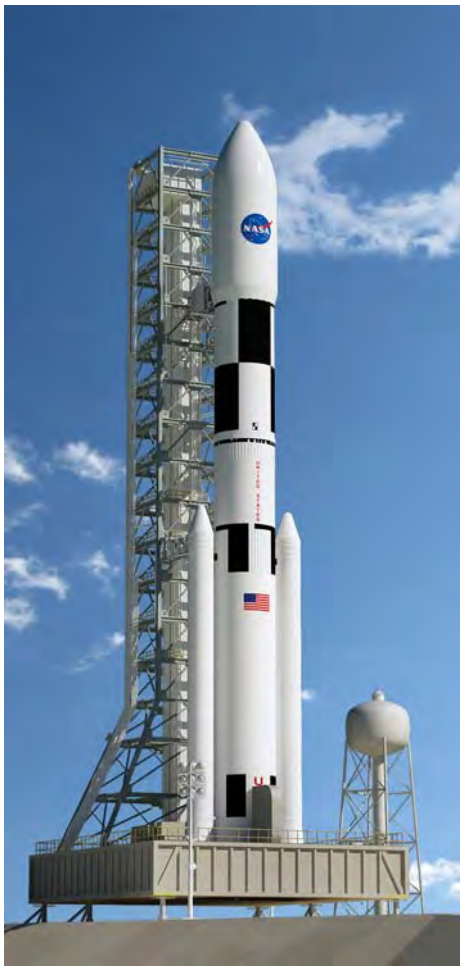
Advanced Booster Design, Development, Test, and Evaluation (DDT&E)

- Scope: Follow-on procurement for DDT&E of a new booster
- Date: RFP target is FY15
- Capability: Evolved at 130 t
- Contract: Full and Open Competition (Liquids or Solids)

Moving Forward from Initial to Evolved Capability

Summary

- **SLS is a national capability that empowers entirely new exploration for missions of national importance.**
- **Program key tenets are *safety, affordability, and sustainability.***
- **SLS builds on a solid foundation of experience and current capacities to enable a timely initial capability and evolve to a flexible heavy-lift capability through competitive opportunities:**
  - Reduce risks leading to an affordable Advanced Booster that meets the evolved capabilities of SLS
  - Enable competition by mitigating targeted Advanced Booster risks to enhance SLS affordability and performance
- **The road ahead promises to be an exciting journey for present and future generations, and we look forward to working with you to continue America's space exploration.**



Advancing the U.S. Legacy of Human Exploration

Agenda

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National Aeronautics and Space Administration

Space Launch System
NASA Research Announcement
Advanced Booster Engineering Demonstration and/or Risk Reduction

Space Launch System

Christopher M. Crumbly, Chairperson
Kellie D. Craig, Contracting Officer

December 15, 2011

Advanced Booster Engineering Demonstration and/or Risk Reduction (NRA) Intent

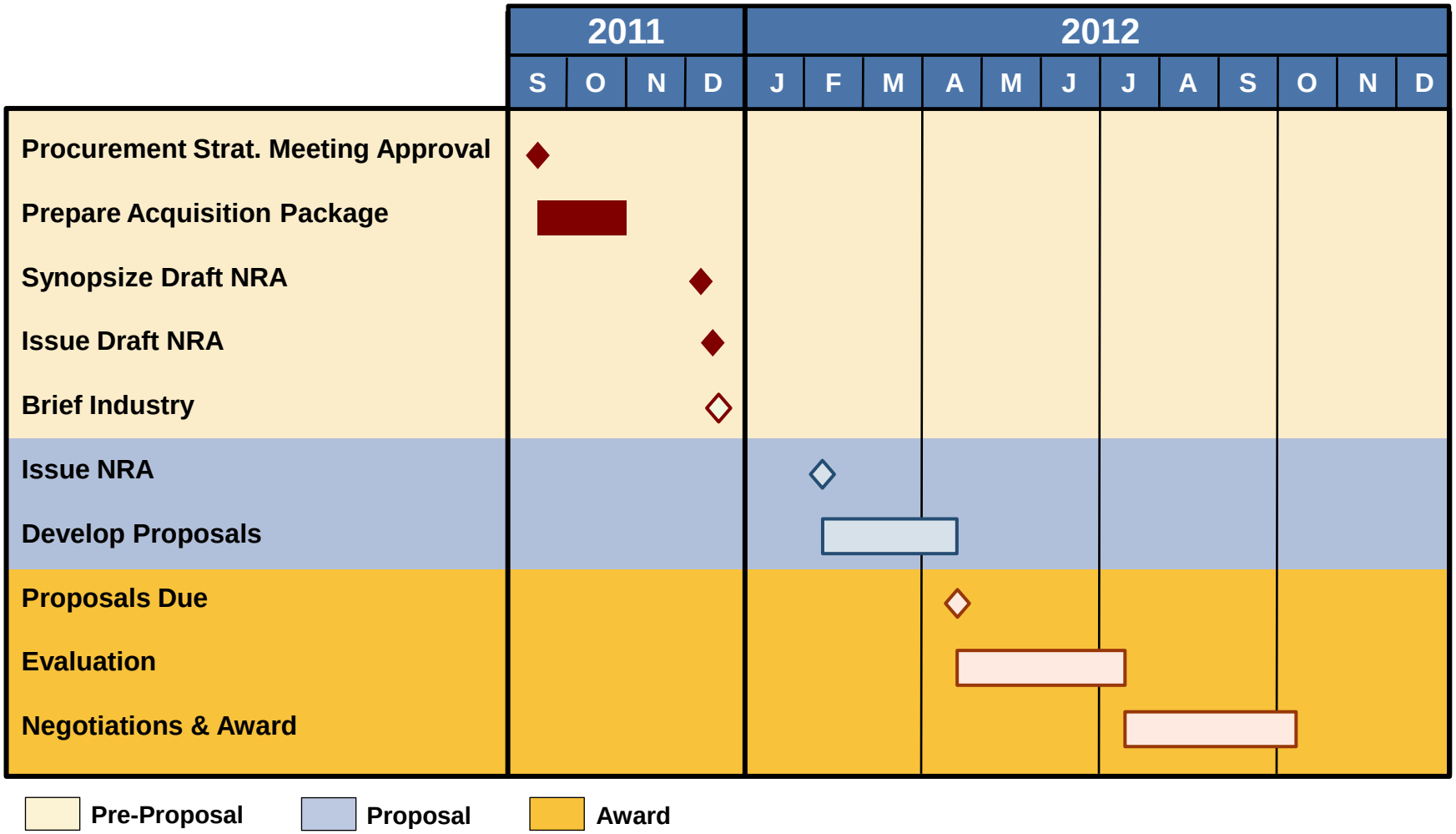
The intent of the ABEDRR effort is to:

- Reduce risks leading to an affordable Advanced Booster that meets the evolved capabilities of SLS
- Enable competition by mitigating targeted Advanced Booster risks to enhance SLS affordability

Key Concepts

- Offerors must propose an Advanced Booster concept that meets SLS Program requirements
- Engineering Demonstration and/or Risk Reduction must relate to the Offeror's Advanced Booster concept
- NRA will not be prescriptive in defining Engineering Demonstration and/or Risk Reduction

Advanced Booster Engineering Demonstration and/or Risk Reduction NRA: Timeline



NRA Summary Charts—Agenda

- **NRA Body**
  - Executive Summary
  - Section 1 - Funding Opportunity Description
  - Section 2 - Award Information
  - Section 3 - Eligibility Information
  - Section 4 - Proposal and Submission Information
  - Section 5 - Application Review Information
  - Section 6 - Award Administration Information
  - Section 7 - NASA Contact
  - Section 8 - Other Information
  - Section 9 - Concluding Statement
  - Appendix A - SLS Mission Requirements and Reference Vehicle Data
  - Appendix B - Advanced Booster Technical Data
  - Appendix C - Acronyms/Abbreviations
  - Appendix D - Subcontractor Information
  - Appendix E - Element of Cost Detail
  - Appendix F - Affidavit—Export Controlled Information

- **Model Contract**
  - Sections A-I
  - Attachment J-2, DPD
  - Attachment J-3, Applicable/Reference Documents
  - Attachment J-10, Meeting and Review Requirements; Assessments of Contractor Performance

NRA Body—Executive Summary

NRA Body

- Executive Summary
- Section 1 - Funding Opportunity Description
- Section 2 - Award Information
- Section 3 - Eligibility Information
- Section 4 - Proposal and Submission Information
- Section 5 - Application Review Information
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NRA Body—Executive Summary

- **ABEDRR NASA Research Announcement (NRA):**
  This NRA seeks identification and mitigation of risks for the Advanced Booster.

- **Offeror shall:**
  - Propose an Advanced Booster concept in response to a set of top-level performance requirements that meet the SLS vehicle mission requirements (provided in NRA Appendices A and B). The demonstration and/or risk reduction efforts must tie directly to the Offeror's proposed Advanced Booster concept.
  - Identify their most relevant technical risks associated with adaptation of Advanced Booster technology to the SLS vehicle configuration.
  - Propose related demonstrations and/or risk reduction efforts on how key risks can be mitigated. One to five risks and associated risk reduction efforts for each Advanced Booster concept are preferred.

NRA Body—Executive Summary

Notional Target Areas for Engineering Demonstration and/or Risk Reduction
Large Booster Component Development/Fabrication
Modular/Common Booster Component Development/Fabrication
Oxygen-Rich Materials/Technologies Development
Refined Petroleum (RP) Combustion Performance and Stability Advancement
Potential Recovery and Reuse of Salt Water Recovered Engines and/or Booster Systems
Structural Testing of Low Mass-to-Strength Ratio Material
Non-Destructive Evaluation of Low Mass-to-Strength Ratio Material Structures
Damage Assessment of Solid Propellant/Liner/Insulation Integrity (during fabrication up until launch)
Solid Booster Propellant Formulations
Advanced Manufacturing Process Demonstration
Advanced Material Selection and Test
Thrust Vector Control (TVC) Systems/Components
Booster-to-Core Interface Attach Point Methods/Locations

Offeror is allowed to present other high-value engineering demonstration and/or risk-reduction areas.

NRA Body—Executive Summary

Key Concepts

- **Offeror must propose an Advanced Booster concept that meets SLS Program requirements**
  - Modification to SLS Program requirements will be considered if significant affordability gains can be shown
- **Engineering Demonstration and/or Risk Reduction must relate to the Offeror's Advanced Booster concept**
- **NRA is not prescriptive in defining Engineering Demonstration and/or Risk Reduction**
  - Allows Offeror maximum flexibility

NRA Body—Sections 1-3

- **NRA Body**
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  - Appendix F - Affidavit—Export Controlled Information

NRA Body—Section 1

Section 1 - Funding Opportunity Description

- **Funding not currently available; award is contingent on the availability of appropriated funds**
- **Construction of facilities is not an allowed activity**
- **Participation by non-U.S. organizations and Foreign Governments is:**
  - Limited to the direct purchase of supplies and/or services that do not constitute research
  - Use of a non-U.S. manufactured launch vehicle is permitted only on a no-exchange-of-funds basis
  - Non-U.S. organizations and Foreign Governments are not allowed to be prime contractors
- **All information needed to respond to this solicitation is contained in this NRA and the *NASA Guidebook for Proposers*. This NRA takes precedence in case of conflict**
- **By reference, the January 2011 edition of the *NASA Guidebook for Proposers* is incorporated into this NRA**

NRA Body—Section 1

Section 1 - Funding Opportunity Description

- **Access to the SLS NRA NNM12ZPS001N Technical Library is through the following website: https://nsckn.nasa.gov**
- **Access will be granted by the Contracting Officer after submission of Appendix F - Affidavit**
- **Offerors are advised that hardware, software, or related materials and services, including technical data, may be subject to U.S. export control laws, including the U.S. Export Administration Act, the Arms Export Control Act, and their associated regulations**
- **Provisions of the International Traffic in Arms Regulations (ITAR, 22 CFR Parts 120-130) may be applicable to this activity**
  - Additional Information may be found at http://www.pmddtc.state.gov/ and http://www.bis.doc.gov
  - Offerors are responsible for the determination of applicability of ITAR regulations to their proposal and appropriate marking

NRA Body—Section 2

Section 2 - Award Information

- **Proposals will be valid for 12 months to allow for a later award should the opportunity become available, unless withdrawn by the Offeror prior to award**
- **Multiple awards anticipated**
- **Total funding available: $200,000,000**
  - Funding allocation: 30% in FY2013; 50% in FY2014; and 20% in FY2015
- **Period of Performance: October 2012 – March 2015 (not-to-exceed 30 months)**
- **May select for shorter period of performance**
- ***Successful Offerors to this NRA are not guaranteed an award for any future Advanced Booster acquisition.***
- ***Unsuccessful Offerors to this NRA are not precluded from an award for any future Advanced Booster acquisition.***

NRA Body—Section 3

Section 3 - Eligibility Information

- **Primes may only be U.S. domestic entities**
- **Other Government agencies, Federally Funded Research & Development Centers (FFRDCs), and NASA Centers or their employees may be a supplier, consultant, or subcontractor**
  - Via separate, fully reimbursable contract vehicles (for example, Space Act Agreement)
- **NASA employees are not permitted to be key personnel**
- **No restriction on the number of proposals an organization may submit**
  - Each proposal must be a separate, stand-alone, and complete document
  - One to five risks and associated risk reduction efforts for each Advanced Booster concept are preferred
- **Cost sharing is not required for contract awards**
- **While cost sharing is not part of the evaluation criteria, it may impact NASA's evaluation of the intrinsic merit**
  - For example, an Offeror's investment in facilities, tooling, or Independent Research & Development will be considered as part of intrinsic merit

NRA Body—Section 4

- **NRA Body**
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NRA Body—Section 4

Section 4.0 - Proposal and Submittal Information

- **This section provides overall guidance for Offeror regarding the Space Launch System (SLS) Advanced Booster Engineering Demonstration and/or Risk Reduction (ABEDRR) NRA**
  - How to acquire the ABEDRR NRA Proposal package
  - Content and Form of the Proposal Submission
    - Volume 1 - Relevance to NASA Objectives
    - Volume 2 - Intrinsic Merit
    - Volume 3 - Price
    - Volume 4 - Model Contract
  - Submission Dates, Time, and Location

- **Offeror can acquire the Advanced Booster Engineering Demonstration and/or Risk Reduction NRA Proposal package from the following sites**
  - Government Point of Entry (FedBizOpps)
  - NASA Acquisition Internet Service (NAIS)
  - NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES)

NRA Body—Section 4

Content and Form of the Proposal Submission

- **Proposal submission shall be prepared in accordance with "Instructions for Responding to NASA Research Announcements" (NFS 1852.235-72) (Nov 2004) as supplemented by Paragraph (n) (Jan 2006) as contained in the *NASA Guidebook for Proposers, Appendix B*. NFS Clause 1852.235-72 is hereby incorporated by reference.**

- **Offerors are instructed to provide the following information to allow identification of their proposals:**
  - Organization name
  - Proposal title
  - Organization type
  - Key personnel names and contact information
  - NRA identification number
  - Requested funding, start date, and duration
  - Proposal submission date
  - Signature of authorizing official

Section 4.2.5 - Additional Proposal Guidance

- **The proposal shall:**
  - Address the evaluation factors in section 5.1
  - Describe any substantial collaboration with individuals not referred to in the Price Volume or use of consultants
- **If multiple Advanced Booster concepts are proposed, each shall be submitted in a separate proposal**

NRA Body—Section 4

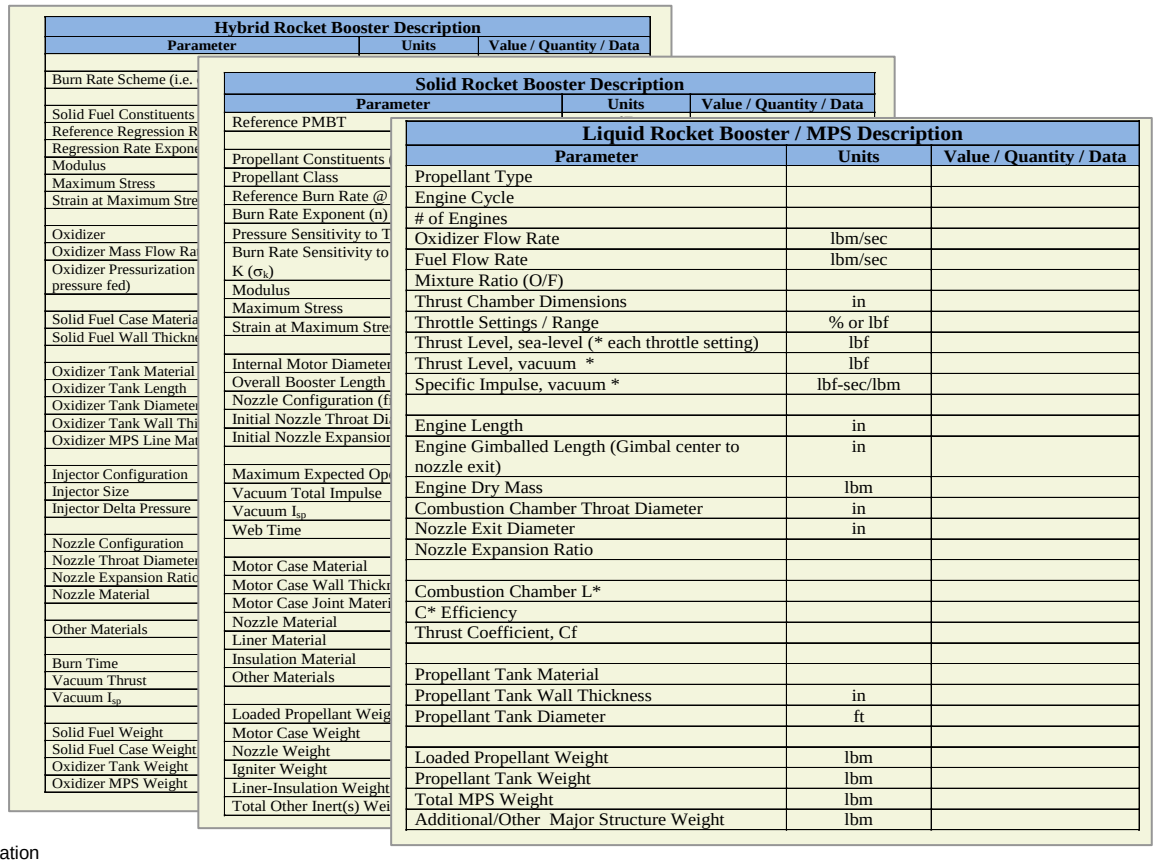
Volume 1 - Relevance to NASA Objectives

- **Restriction on Use and Disclosure of Proposal Information**
- **Table of Contents**
- **Executive Summary**
- **Advanced Booster Concept Description**
  - Concept Risk List and Engineering Demonstration and/or Risk Reduction Summary
  - Liquid Rocket Booster (LRB) Propulsion Subsystem Description (if applicable)
  - Solid Rocket Booster (SRB) Propulsion Subsystem Description (if applicable)
  - Hybrid Rocket Booster (HRB) Propulsion Subsystem Description (if applicable)
  - Major Structures/Interface Structures
  - Mass Statement
  - Advanced Booster and Reference Vehicle
  - Reliability
- **Affordability Plan**

NRA Body—Section 4 (Appendix B)

Volume 1 - Advanced Booster Concept Description

- **Requires the Offeror to provide predefined technical data and additional technical information required for proposal evaluation**
- **Appendix B will contain NASA-created Export controlled information**
  - Offeror must obtain clearance from Contracting Officer to access Appendix B



Hybrid Rocket Booster Description

Parameter	Units	Value / Quantity / Data
Burn Rate Scheme (i.e.		
Solid Fuel Constituents		
Reference Regression R		
Regression Rate Expone		
Modulus		
Maximum Stress		
Strain at Maximum Stre		
Oxidizer		
Oxidizer Mass Flow Ra		
Oxidizer Pressurization pressure fed)		
Solid Fuel Case Materia		
Solid Fuel Wall Thickne		
Oxidizer Tank Material		
Oxidizer Tank Length		
Oxidizer Tank Diameter		
Oxidizer Tank Wall Thi		
Oxidizer MPS Line Mat		
Injector Configuration		
Injector Size		
Injector Delta Pressure		
Nozzle Configuration		
Nozzle Throat Diameter		
Nozzle Expansion Ratio		
Nozzle Material		
Other Materials		
Burn Time		
Vacuum Thrust		
Vacuum I_{sp}		
Solid Fuel Weight		
Solid Fuel Case Weight		
Oxidizer Tank Weight		
Oxidizer MPS Weight		

Solid Rocket Booster Description

Parameter	Units	Value / Quantity / Data
Reference PMBT		
Propellant Constituents (		
Propellant Class		
Reference Burn Rate @		
Burn Rate Exponent (n)		
Pressure Sensitivity to T		
Burn Rate Sensitivity to K (σ_k)		
Modulus		
Maximum Stress		
Strain at Maximum Stre		
Internal Motor Diameter		
Overall Booster Length		
Nozzle Configuration (f		
Initial Nozzle Throat Di		
Initial Nozzle Expansion		
Maximum Expected Op		
Vacuum Total Impulse		
Vacuum I_{sp}		
Web Time		
Motor Case Material		
Motor Case Wall Thickn		
Motor Case Joint Materi		
Nozzle Material		
Liner Material		
Insulation Material		
Other Materials		
Loaded Propellant Weig		
Motor Case Weight		
Nozzle Weight		
Igniter Weight		
Liner-Insulation Weight		
Total Other Inert(s) Wei		

Liquid Rocket Booster / MPS Description

Parameter	Units	Value / Quantity / Data
Propellant Type		
Engine Cycle		
# of Engines		
Oxidizer Flow Rate	lbm/sec	
Fuel Flow Rate	lbm/sec	
Mixture Ratio (O/F)		
Thrust Chamber Dimensions	in	
Throttle Settings / Range	% or lbf	
Thrust Level, sea-level (* each throttle setting)	lbf	
Thrust Level, vacuum *	lbf	
Specific Impulse, vacuum *	lbf-sec/lbm	
Engine Length	in	
Engine Gimballed Length (Gimbal center to nozzle exit)	in	
Engine Dry Mass	lbm	
Combustion Chamber Throat Diameter	in	
Nozzle Exit Diameter	in	
Nozzle Expansion Ratio		
Combustion Chamber L*		
C* Efficiency		
Thrust Coefficient, Cf		
Propellant Tank Material		
Propellant Tank Wall Thickness	in	
Propellant Tank Diameter	ft	
Loaded Propellant Weight	lbm	
Propellant Tank Weight	lbm	
Total MPS Weight	lbm	
Additional/Other Major Structure Weight	lbm	

NRA Body—Section 4

Volume 1 - Relevance to NASA Objectives

- **Affordability Plan**
  - **Description of affordability strategies as they relate to the Offeror's concept and how considerations of cost will be a principal factor from development to retirement**
    - Execute the SLS Program within the baseline constraints
    - Identify ground rules and assumptions
    - Identify work activities, procedures, and processes so they are compliant with this strategy
    - Identify adaptation and benefits of Engineering Demonstration and Risk Reduction (EDRR) efforts to affordability strategy
    - Update 30 days after completion of contract
  - **Modification to SLS Program requirements will be considered if significant affordability gains can be shown**
    - Offeror shall submit detailed description of modifications and affordability improvements to the Advanced Booster concept as well as the overall SLS Program affordability
  - **Provide schedule and cost rough orders of magnitude (ROMs) with proposal and updated per Affordability Plan**

NRA Body—Section 4

Volume 2 - Intrinsic Merit

- **Management Approach**
  - Qualifications of Team
  - Teaming Arrangements
  - Facilities, Equipment, and Key Capabilities
  - Ground Rules and Assumptions
  - Deviations/Exceptions
- **Technical Approach**
  - Description of Proposed Engineering Demonstration and/or Risk Reduction Effort
  - Relationship to Previous or Ongoing Work
- **Specific Model Contract Information**
  - Data Procurement Document (DPD)
  - Work Breakdown Structure (WBS)
  - Statement of Work (SOW)
  - Subcontracting Plan
  - Data Rights
  - Milestone Payment Plan

NRA Body—Section 4

Volume 2 - Intrinsic Merit

- **Management Approach**
  - Offeror shall describe their management approach for the proposed effort
- **Qualification of Team**
  - Offeror shall submit a description of their team and rationale for their qualifications
  - Past Performance Information Retrieval System (PPIRS) will be utilized by the Government to evaluate Offeror's past performance (no submission required from Offeror)
- **Teaming Arrangements**
  - Offeror shall disclose pertinent information regarding teaming for execution of the proposed effort, including commitment letters, and list of subcontractors
  - Offeror shall describe Small Business Utilization and how Small Business goals will be met
- **Facilities, Equipment, and Key Capabilities**
  - Offeror shall identify the facilities, equipment, tooling and other special needs required to accomplish the proposed effort
- **Ground Rules and Assumptions (GR&A)**
  - Offeror shall identify any GR&A that require Government concurrence (i.e., facilities, property, etc.)
- **Deviations and Exceptions**
  - Offeror shall indentify any deviations or exceptions to the NRA and model contract

NRA Body—Section 4

Volume 2 - Intrinsic Merit

- **Technical Approach**
  - Offeror shall describe the methodology to be employed to execute the technical objectives, systems engineering approach, describe innovations, and propose a Statement of Work for each engineering demonstration and/or risk reduction effort.

- **Description of Proposed Engineering Demonstration and/or Risk Reduction Effort**
  - Offeror shall provide detailed descriptions of the proposed demonstration and/or risk reduction effort and how it applies to their overall booster concept
  - Statement of Work, Work Breakdown Structure, and Data Procurement Document shall be provided under the model contract but evaluated for intrinsic merit

- **Relationship to Previous or Ongoing Work**
  - The Offeror shall submit the relation of the proposed engineering demonstration and/or risk reduction effort to the present state of knowledge and relation to previous or ongoing work performed for or funded by a Federal agency

NRA Body—Section 4

Volume 3 - Price

- **Cost of Proposal**
  - **Introduction**
    - Proper presentation, organization, and clarity, as well as adequate supporting documentation, must be provided to facilitate Government evaluation of the proposal
    - The uniform policy concerning the price evaluation criterion is described in Appendix C of the *NASA Guidebook for Proposers*
  - **General Instructions**
    - Describes how cost and price will be evaluated and compared to available NASA funds
    - The Government will evaluate price for reasonableness and completeness
  - **Specific Price/Cost Detail**
    - Provide cost data by Element of Cost (Appendix E) for each Risk Area proposed
    - Each Risk Area is “free standing” to allow for award of single risk area up to selection of all risk areas proposed (i.e., complete set of cost and price data for each Risk Area proposed)
    - A limited set of data will be required with the proposal
      - Description and rationale for components of cost
      - WBS must be at a sufficient level to facilitate a complete evaluation and understanding
  - **Deviations from Price Volume Requirements**
    - Deviations shall be fully explained and supported
  - **Additional Price Requirements if Selected for Award**
    - Detailed WBS and BOEs required for negotiations

NRA Body—Section 4

Volume 4 - Model Contract

- **Model Contract**
  - Contract Terms and Conditions
  - Statement of Work
  - Data Procurement Document
  - Work Breakdown Structure
  - Subcontracting Plan
    - Small Business Plan
    - Cooperative Agreements
    - Enhanced Use Lease Agreements
    - Space Act Agreements

NRA Body—Section 4

Proposal Page Limits

Required Constituent Parts of a Proposal (in order of assembly)	Page Limit
Restriction on Use and Disclosure of Proposal Information (each Volume)	1
Table of Contents (each volume)	Unlimited
Volume 1 – Relevance to NASA Objectives	25
• Executive Summary	3
• Affordability Plan	15
	Total 43
Volume 2 – Intrinsic Merit	50
• Space Act Agreements or Other Government Agreements	Unlimited
• Commitment Letters	Unlimited
• Signed Teaming Agreements	Unlimited
Volume 3 – Price	Unlimited
Volume 4 – Model Contract	Unlimited except as stated below
• Statement of Work	10 (per EDRR)
• Data Procurement Document (If Offeror makes modifications)	40
• Work Breakdown Structure	3 (per EDRR)

NRA – Section 4 - Proposal Submittal

- **The Offeror is advised that proposal submittal will not be made via NSPIRES.**

- **Proposal package shall be submitted to Kathryn Cooper at:**

  NASA
  George C. Marshall Space Flight Center
  Attn: Kathryn Cooper/PS41
  MSFC, AL 35812

  - 1 Original plus 10 paper copies
  - 2 Digital copies
  - Electronic copies shall be provided on a virus-free CD ROM in PC format and shall be readable by Microsoft Office Word 2007 edition and Microsoft Office Excel 2007 edition.

NRA Body—Section 5

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NRA Body—Section 5

Evaluation Criteria and Basis for Award

- **Evaluation Criteria (all equal)**
  - Relevance to NASA's Objectives
  - Intrinsic Merit
  - Price

- **Basis for Award**
  - Based upon the evaluation of the Offeror’s Advanced Booster concept and proposed demonstration and/or risk reduction effort and funding availability.

NRA Body—Section 5

Volume 1:
Relevance to NASA Objectives

Why/What

- Enhances Affordability
- Improves Reliability
- Meets Performance Reqts

Volume 2 and Volume 4*:
Intrinsic Merit

What/How

- Management Approach
- Technical Approach
- Small Business Utilization

Volume 3:
Price

How Much

- Reasonableness
- Completeness
- Schedule

Findings

Strengths & Weaknesses

*** Only selected portions—SOW, WBS, DPD**

NRA Body—Section 5

Findings
Strengths & Weaknesses

1. Assign Significance
2. Rank Order
3. Assign Adjectives to all 3 Factors

E	Excellent
VG	Very Good
G	Good
F	Fair
P	Poor
RR	Risk Reduction
H	High
M	Medium
L	Low

Factor 1:
Relevance to NASA Objectives E, VG, G, F, P

	Factor 2:	Factor 3:	
	Intrinsic Merit E, VG, G, F, P	Price	Price Confidence H, M, L
RR 1			
RR 2			
RR 3			
RR 4			
RR 5			

NRA Body—Section 5

Relevance To NASA Objectives

- **What?**
  - Advanced Booster Concept
  - Detailed Risk List
  - EDRR Summaries
- **Why?**
  - Enhances Affordability
  - Improves Reliability
  - Meets Performance Requirements

One Adjective Rating per Proposal (E/VG/G/F/P) Based on Ranked and Consolidated List of Strengths and Weaknesses

NRA Body—Section 5

Intrinsic Merit

- **How?**
  - **Management Approach**
    - Existing Capabilities, Experience, and Management Techniques
    - Teaming/Partnering
    - Past Performance
  - **Technical Approach**
    - Systems Engineering
    - Innovativeness
    - Technical Management
    - Logical Methodologies
  - **Small Business Utilization**
- **Specifically Evaluates Model Contract for:**
  - **SOW, DPD, and WBS**
  - **Subcontracting Plan**
  - **Data Rights**

Adjective Rating per EDRR (E/VG/G/F/P) Based on Ranked and Consolidated List of Strengths and Weaknesses

NRA Body—Section 5

Intrinsic Merit - Past Performance

- **Government will evaluate Offeror using the Past Performance Information Retrieval System (PPIRS)**
  - The Government will NOT evaluate any past performance data if included in Offeror's proposal
- **Prime contractor and major subcontractors will be reviewed (performing 5% or more in content value)**
- **PPIRS information reviewed will be based on relevant scope of effort and dollar value**
- **The Government will notify the Offeror of any past performance information reviewed in PPIRS determined as a weakness.**
  - After notification, the Offeror may provide to the Government supplemental information on the performance corrective actions.
  - The Government will consider this information in relationship to the weakness identified through PPIRS.
- **Lack of relevant past performance will not be evaluated favorably or unfavorably**

NRA Body—Section 5

Price

- **Total Price Proposed Evaluated**
  - Reasonableness
  - Clarity
  - Within Funding Limits
  - Total direct labor hours by skill mix, materials, travel, other direct costs (ODCs), and subcontracts

Level of Confidence per EDRR (Hi/Med/Lo)

NRA Body—Section 5

Strength/Weakness Definitions

Significant Strength	An aspect of the proposal that greatly enhances the potential for successful contract performance.
Strength	An aspect of the proposal that will have some positive impact on the successful performance of the contract.
Weakness	A flaw in the proposal that increases the risk of unsuccessful contract performance.
Significant Weakness	A flaw that appreciably increases the risk of unsuccessful contract performance.

Adjectival Ratings

Excellent	Exceptional merit that fully responds to the objectives of the NRA as documented by numerous or significant strengths and no significant weaknesses.
Very Good	High merit that fully responds to the objectives of the NRA, whose strengths fully outweigh any weaknesses.
Good	Credible response to the NRA, whose strengths and weaknesses essentially balance each other out
Fair	Nominal response to the NRA but whose weaknesses outweigh any strengths.
Poor	Flawed having weaknesses that significantly outweigh strengths.

Price Confidence Ratings

High	The Government has a very high level of confidence that the Offeror can perform successfully at or below the proposed price.
Medium	The Government has a reasonable level of confidence that the Offeror can perform successfully at or below the proposed price.
Low	The Government has a marginal level of confidence that the Offeror can perform successfully at or below the proposed price.

NRA Body—Sections 6-9

- **NRA Body**
  - Executive Summary
  - Section 1 - Funding Opportunity Description
  - Section 2 - Award Information
  - Section 3 - Eligibility Information
  - Section 4 - Proposal and Submission Information
  - Section 5 - Application Review Information
  - Section 6 - Award Administration Information
  - Section 7 - NASA Contact
  - Section 8 - Other Information
  - Section 9 - Concluding Statement
  - Appendix A - SLS Mission Requirements and Reference Vehicle Data
  - Appendix B - Advanced Booster Technical Data
  - Appendix C - Acronyms/Abbreviations
  - Appendix D - Subcontractor Information
  - Appendix E - Element of Cost Detail
  - Appendix F - Affidavit—Export Controlled Information

NRA Body—Sections 6 and 7

Section 6 - Award Administration Information

- Notification of both the selected, as well as the non-selected Offerors, will be consistent with section C.5.3 of the *NASA Guidebook for Proposers*
- Anticipate Firm-Fixed-Price Awards
- Contract awards will be subject to the provisions of the Federal Acquisition Regulations (FAR) and the NASA FAR Supplement (NFS)

Section 7 - NASA Contact

- All questions shall be submitted in writing within 30 days of the issue date of this Draft NRA
- Questions shall be submitted to the procurement point of contact: Kathryn Cooper

NRA Body—Sections 8 and 9

Section 8 - Other Information

- Announcement of Updates/Amendments to Solicitation will be added as a formal amendment to this NRA
- It is the responsibility of the prospective proposer to check for updates concerning the program(s) of interest
- NASA Partnerships Offices

Section 9 - Concluding Statement

- NASA encourages the participation of industry in its SLS Advanced Booster Engineering Demonstration and/or Risk Reduction acquisition

NRA Body—Appendices

- **NRA Body**
  - Executive Summary
  - Section 1 - Funding Opportunity Description
  - Section 2 - Award Information
  - Section 3 - Eligibility Information
  - Section 4 - Proposal and Submission Information
  - Section 5 - Application Review Information
  - Section 6 - Award Administration Information
  - Section 7 - NASA Contact
  - Section 8 - Other Information
  - Section 9 - Concluding Statement
  - Appendix A - SLS Mission Requirements and Reference Vehicle Data
  - Appendix B - Advanced Booster Technical Data
  - Appendix C - Acronyms/Abbreviations
  - Appendix D - Subcontractor Information
  - Appendix E - Element of Cost Detail
  - Appendix F - Affidavit—Export Controlled Information

NRA Body—Appendix A

Appendix A – SLS Mission Requirements and Reference Vehicle Technical Data

- **NASA will provide basic technical information in order for Offeror to size a first-order reference vehicle with their proposed Advanced Booster concept to meet 130 metric tons to low-Earth orbit (LEO)**

  Note: Data provided to Offeror in Appendix A and Appendix B (Export Controlled)

- **This allows each Offeror to identify risk areas and also propose demonstration and/or risk mitigation efforts associated with their highest risks**

NRA Body—Appendix A

Technical Requirements
Most significant requirements to SLS vehicle and booster sizing

- **Performance**
  1. **Mass to Orbit - 130 metric tons (286,601 lbm) to LEO**
  2. **Vehicle Dynamic Pressure < 800 psf**
  3. **Vehicle Acceleration < 4.0 g's**
- **Vehicle Configuration**
  4. **Booster-Core Interface**
     - Forward and aft mechanical attach points similar to Space Shuttle
  5. **Booster-Ground Interface**
     - Vehicle mates to 8 mechanical liftoff posts on Mobile Launcher (ML) similar to Space Shuttle
     - Vehicle fits to plume hole on ML
  6. **Load Path**
     - Boosters support vehicle mass / loads (on ML) during assembly, rollout, prep, and tanking
     - Boosters carry bulk of liftoff and ascent loads through forward attach points to the Core
  7. **Height – Booster element max height limited to 235 ft based on Kennedy Space Center's Vehicle Assembly Building (VAB) lift constraint**
  8. **Vehicle Width – Vehicle width (core + boosters) limited to 67.5 ft due to VAB constraint**

NRA Body—Appendix A

Reference Launch Vehicle Description

- **Booster mass and propulsion information**
  - Liquid – LOX/RP with six 1M lbf class high-performance hydrocarbon engines

  or

  - Solid - HTPB solid motor thrust trace
- **Core Stage mass and propulsion information**
  - LOX/LH2 with five RS-25E engines
- **Upper Stage mass and propulsion information**
  - LOX/LH2 with two J-2X engines (288k lbf with smaller epsilon nozzle)
- **Non-propulsive payload element**

NRA Body—Appendix A

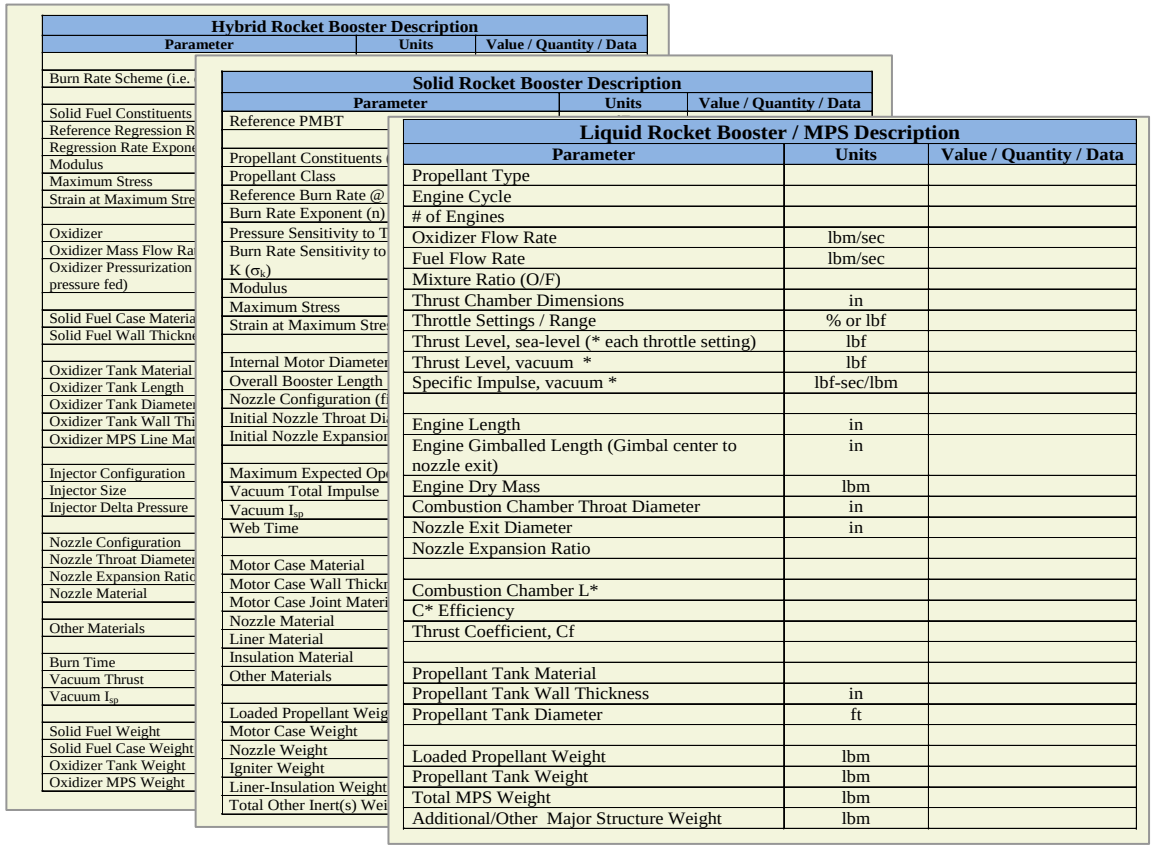
Reference Mission Information

- **Launch site – KSC LC-39B (geodetic references, latitude, longitude, altitude)**
- **Ascent description and timeline**
  - Liftoff, pitch/roll maneuvers, gravity turn, propulsion assumptions for tailoff or shutdown, and staging information
- **Ascent environments**
  - GRACE gravitational models
  - GRAM atmosphere and winds
- **Control**
  - Assuming basic 3-DOF trajectory analysis
  - Control authority maintained if control torques remain 2x aero torques due to angle of attack (AoA) and side-slip variations (+/- 8 deg)
- **Guidance (similar to Shuttle)**
  - Open loop prior to booster separation
  - Closed-loop algorithm (PEG) after booster separation
- **Trajectory states**
  - At booster separation
    - Solid: Net booster thrust equals 80,000 lbf
    - Liquid: Propellant depletion
  - At mass injection to LEO
    - -47 x 130 nm orbit at 28.5 degrees inclination, with insertion at 77 nm altitude

NRA Body—Section 4 (Appendix B)

Volume 1 - Advanced Booster Concept Description

- **Requires the Offeror to provide predefined technical data and additional technical information required for proposal evaluation**
- **Appendix B will contain NASA-created Export controlled information**
  - Offeror must obtain clearance from Contracting Officer to access Appendix B



Hybrid Rocket Booster Description

Parameter	Units	Value / Quantity / Data
Burn Rate Scheme (i.e.		
Solid Fuel Constituents		
Reference Regression R		
Regression Rate Expone		
Modulus		
Maximum Stress		
Strain at Maximum Stre		
Oxidizer		
Oxidizer Mass Flow Ra		
Oxidizer Pressurization pressure fed)		
Solid Fuel Case Materia		
Solid Fuel Wall Thickne		
Oxidizer Tank Material		
Oxidizer Tank Length		
Oxidizer Tank Diameter		
Oxidizer Tank Wall Thi		
Oxidizer MPS Line Mat		
Injector Configuration		
Injector Size		
Injector Delta Pressure		
Nozzle Configuration		
Nozzle Throat Diameter		
Nozzle Expansion Ratio		
Nozzle Material		
Other Materials		
Burn Time		
Vacuum Thrust		
Vacuum I_{sp}		
Solid Fuel Weight		
Solid Fuel Case Weight		
Oxidizer Tank Weight		
Oxidizer MPS Weight		

Solid Rocket Booster Description

Parameter	Units	Value / Quantity / Data
Reference PMBT		
Propellant Constituents		
Propellant Class		
Reference Burn Rate @		
Burn Rate Exponent (n)		
Pressure Sensitivity to T		
Burn Rate Sensitivity to K (σ_k)		
Modulus		
Maximum Stress		
Strain at Maximum Stre		
Internal Motor Diameter		
Overall Booster Length		
Nozzle Configuration (f		
Initial Nozzle Throat Di		
Initial Nozzle Expansion		
Maximum Expected Op		
Vacuum Total Impulse		
Vacuum I_{sp}		
Web Time		
Motor Case Material		
Motor Case Wall Thickn		
Motor Case Joint Materi		
Nozzle Material		
Liner Material		
Insulation Material		
Other Materials		
Loaded Propellant Weig		
Motor Case Weight		
Nozzle Weight		
Igniter Weight		
Liner-Insulation Weight		
Total Other Inert(s) Wei		

Liquid Rocket Booster / MPS Description

Parameter	Units	Value / Quantity / Data
Propellant Type		
Engine Cycle		
# of Engines		
Oxidizer Flow Rate	lbm/sec	
Fuel Flow Rate	lbm/sec	
Mixture Ratio (O/F)		
Thrust Chamber Dimensions	in	
Throttle Settings / Range	% or lbf	
Thrust Level, sea-level (* each throttle setting)	lbf	
Thrust Level, vacuum *	lbf	
Specific Impulse, vacuum *	lbf-sec/lbm	
Engine Length	in	
Engine Gimballed Length (Gimbal center to nozzle exit)	in	
Engine Dry Mass	lbm	
Combustion Chamber Throat Diameter	in	
Nozzle Exit Diameter	in	
Nozzle Expansion Ratio		
Combustion Chamber L*		
C* Efficiency		
Thrust Coefficient, Cf		
Propellant Tank Material		
Propellant Tank Wall Thickness	in	
Propellant Tank Diameter	ft	
Loaded Propellant Weight	lbm	
Propellant Tank Weight	lbm	
Total MPS Weight	lbm	
Additional/Other Major Structure Weight	lbm	

Appendix C - Acronyms/Abbreviations

Appendi

Acronyms/Abbr

21CGS	21st Century Ground Systems
AB	Advanced Booster
ABEDRR	Advanced Booster Engineering Dem
ADL	Applicable Documents List
ANSI	American National Standards Instit
AoA	Angle-of-Attack
ASME	American Society of Mechanical Eng
ATP	Authority to Proceed
CAD	Computer Aided Design
CFO	Chief Financial Office
CFR	Code of Federal Regulations
COR	Contracting Officer's Representativ
COTR	Contracting Officer's Technical Repr
CSME	Core Stage Main Engine
DDT&E	Design Development Test and Evalu
DoD	Department of Defense
DoF	Degrees-of-Freedom
DOT	Department of Transportation
DPD	Data Procurement Document
DRD	Data Requirements Document
DRL	Data Requirements List
DRM	Design Reference Mission

EAR	Export Administration Regulations
EDRR	Engineering Demonstration and Risk R
EPA	Environmental Protection Agency
ETR	Eastern Test Range
FAPIIS	Federal Awardee Performance and In
FAR	Federal Acquisition Regulation
FFRDC	Federally Funded Research and Devel
FISMA	Federal Information Security Manage
FTS	Flight Termination System
FPR	Flight Performance Reserve
G&A	General and Administrative
GFP	Government Furnished Property
GLOW	Gross Liftoff Weight
GRACE	Gravity Recovery and Climate Experin
GSE	Ground Support Equipment
HCF	High Cycle Fatigue
HDBK	Handbook
HEO	Human Exploration and Operations
HRB	Hybrid Rocket Booster
IACRO	Inter Agency Cost Reimbursement Or
IAGP	Installation Accountable Government
ICD	Interface Control Document
IPO	Industrial Property Officer
IR&D	Independent Research and Developm

IRIS	Incident Reporting Information System
ITAR	International Traffic in Arms Regulation
JFTR	Joint Federal Travel Regulations
KSC	Kennedy Space Center
LEO	Low Earth Orbit
LPS	Lightning Protection System
LRB	Liquid Rocket Booster
MAIR	Maximum Allowable Incident Rate
MECO	Main Engine Cut Off
MIL	Military
MIPR	Military Interdepartmental Purchase Re
ML	Mobile Launcher
MPR	Marshall Procedural Requirement
MPS	Main Propulsion System
MSFC	Marshall Space Flight Center
MWI	Marshall Work Instruction
NAIS	NASA Acquisition Internet Service
NASA	National Aeronautics and Space Admini
N/A	Not Applicable
NSPIRES	NASA Solicitation and Proposal Integrat
NESS	NF 1018 Electronic Submission System
NFS	NASA FAR Supplement
NPD	NASA Procedure Document
NPE	Non-propulsive Payload Element

NPR	NASA Procedural Requirements
NRA	NASA Research Announcement
NRRS	NASA Records Retention Schedules
ODC	Other Direct Costs
OMB	Office of Management and Budget
OML	Outer Mold Line
OPR	Office of Primary Responsibility
ORR	Operational Readiness Review
ORI	Operational Readiness Inspection
OSHA	Occupational Safety and Health Administration
PEG	Powered Explicit Guidance
PIV	Personal Identity Verification
PKI	Public Key Infrastructure
POC	Point of Contact
POST	Program to Optimize Simulated Trajectories
PP&E	Property, Plant, and Equipment
PPE	Personal Protective Equipment
PPIRS	Past Performance Information Retrieval System
PRS	Performance Requirement Summary
PSA	Property Support Assistant
PWS	Performance Work Statement
RINU	Redundant Inertial Navigation Unit
ROM	Rough Order of Magnitude
RSRMV	Reusable Solid Rocket Motor V (Five Segment)

NRA Body—Section 4 (Appendix D)

APPENDIX D
SUBCONTRACTOR INFORMATION

1. COMPANY NAME: _____

ADDRESS: _____

_____

POINT OF CONTACT/PHONE NUMBER_____

CONTRACT VALUE:_____TYPE OF CONTRACT:_____

BRIEF DESCRIPTION OF WORK: _____

_____

2. COMPANY NAME: _____

ADDRESS: _____

_____

POINT OF CONTACT/PHONE NUMBER_____

CONTRACT VALUE:_____TYPE OF CONTRACT:_____

BRIEF DESCRIPTION OF WORK: _____

_____

3. COMPANY NAME: _____

ADDRESS: _____

_____

POINT OF CONTACT/PHONE NUMBER_____

CONTRACT VALUE:_____TYPE OF CONTRACT:_____

BRIEF DESCRIPTION OF WORK: _____

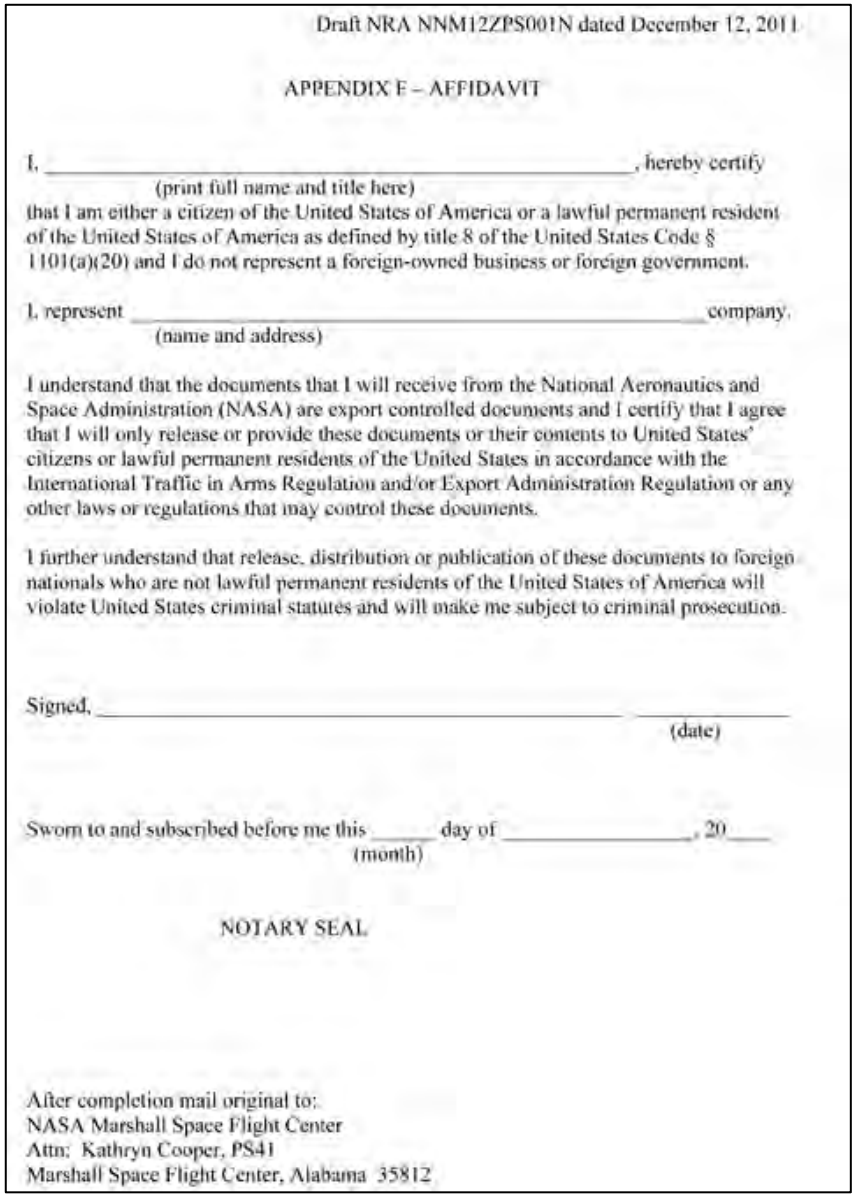
_____

Note: Offeror may duplicate as necessary for proposal purposes.

NRA Body—Section 4 – Element of Cost Detail (Appendix E)

	APPENDIX E ELEMENT OF COST DETAIL	GFY13	GFY14	GFY15	TOTAL ($K)
1.	**Direct Labor Hours**				
	Program Administration Engineering Manufacturing *Maj or Subcontract*				
	Total Hours				
2.	**Direct Labor Cost**				
	Program Administration Engineering Manufacturing				
	Total Direct Labor Cost				
3.	**Indirect Labor Cost**				
4.	**Sub Total Cost**				
5.	**Non-Labor**				
a. b. c.	Material Subcontracts Other Direct Cost				
	Total Non-Labor				
6.	**Sub Total Labor and Non-Labor**				
7.	**General & Administrative**				
8.	**Total Cost**				
9.	**Profit/Fee**				
10.	**Less Proposed Cost Sharing (if any)**				
11.	**Total Cost and Fee**				
12.	**Proposed Space Act Agreement Cost**				
13.	**Total Project Price**				

NRA Body—Section 4 – Affidavit (Appendix F)



Draft NRA NNM12ZPS001N dated December 12, 2011

APPENDIX F – AFFIDAVIT

I, _____, hereby certify
(print full name and title here)
that I am either a citizen of the United States of America or a lawful permanent resident of the United States of America as defined by title 8 of the United States Code § 1101(a)(20) and I do not represent a foreign-owned business or foreign government.

I, represent _____ company.
(name and address)

I understand that the documents that I will receive from the National Aeronautics and Space Administration (NASA) are export controlled documents and I certify that I agree that I will only release or provide these documents or their contents to United States' citizens or lawful permanent residents of the United States in accordance with the International Traffic in Arms Regulation and/or Export Administration Regulation or any other laws or regulations that may control these documents.

I further understand that release, distribution or publication of these documents to foreign nationals who are not lawful permanent residents of the United States of America will violate United States criminal statutes and will make me subject to criminal prosecution.

Signed, _____ _____
(date)

Sworn to and subscribed before me this _____ day of _____, 20____
(month)

NOTARY SEAL

After completion mail original to:
NASA Marshall Space Flight Center
Attn: Kathryn Cooper, PS41
Marshall Space Flight Center, Alabama 35812

NRA Model Contract

Kellie Craig

Contracting Officer

NRA – Model Contract

Volume 4 - Model Contract

- Contract Terms and Conditions
- Statement of Work
- Data Procurement Document
- Applicable and Reference Documents
- Work Breakdown Structure
- Subcontract Plan
- Safety, Health, and Environmental (SHE) Plan*
- Organizational Conflict of Interests Avoidance Plan*
- IT Security Management Plan*
- Contract Funding
- Meeting and Review Requirements; Assessments of Contractor Performance

* If selected for award

NRA Model Contract

Clause B.3, Consideration and Payment

- Milestone Payment Schedule (Kickoff, Final Report, Affordability Plan are required); Offeror may propose changes/additions to the milestone payment schedule
- Performance assessed via Attachment J-10
- Government reserves the right to terminate for convenience or default the subject contract should the Contractor fail to adequately complete milestone(s)

Milestone	Payment Amount
1. Completion of Kickoff Meeting and Briefing Package	*$
2. Completion of Technical Interchange Meeting 1 and Briefing Package	*$
3. Completion of Technical Interchange Meeting 2 and Briefing Package	*$
4. Completion of Technical Interchange Meeting 3 and Briefing Package	*$
5. Completion of Technical Interchange Meeting 4 and Briefing Package	*$
6. Completion of Technical Interchange Meeting 5 and Briefing Package	*$
7. Completion of Technical Interchange Meeting 6 and Briefing Package	*$
8. Completion of Technical Interchange Meeting 7 and Briefing Package	*$
9. Completion of Technical Interchange Meeting 8 and Briefing Package	*$
10. Completion of Technical Interchange Meeting 9 and Briefing Package	*$
11. Engineering Demonstration(s) and/or Risk Reduction Event	*$
12. Delivery and Approval of Final Management and Technical Report; Delivery and Approval of Affordability Plan; and Completion of Final Briefing	*$

NRA Model Contract

- **Clause F.3, Contract Hardware Deliverables – Offeror to propose as appropriate or may be added if selected for award**

- **Section G – Government Furnished Property Clauses – incorporated at contract award as appropriate**

- **Clause G.11, Contractor Employee Badging and Employment Termination Clearance (MSFC 52.204-90) (Aug 2010)**
  - Contractor employees must undergo a background investigation prior to being issued a full-time Contractor badge granting access to Redstone Arsenal
  - The Contractor shall establish procedures to:
    - Ensure that badged Contractor employees who no longer require Center access properly clear all accounts
    - Turn in their badge to the MSFC Protective Services Office when the access is no longer needed

NRA Model Contract

- **Clause H.2, Safety and Health**
  - The Contractor shall continually update the safety and health plan when necessary
  - The Contractor shall furnish a list of all hazardous operations to be performed
  - NASA and the Contractor shall jointly decide which operations are to be considered hazardous, with NASA as the final authority
  - Before hazardous operations commence, the Contractor shall submit for NASA concurrence:
    (1) Written hazardous operating procedures for all hazardous operations; and/or
    (2) Qualification standards for personnel involved in hazardous operations
- **Clause H.3, Major Breach of Safety or Security**
  - A major breach of safety may constitute a breach of contract that entitles the Government to exercise any of its rights and remedies applicable to material parts of this contract, including termination for default
- **Clause H.5, Key Personnel and Facilities**
  - To be proposed by Offeror
  - Change requires modification

NRA Model Contract

- **Clause H.12, Representations, Certifications, and Other Statements of Offeror**
  - If there are any significant changes to the representations and certifications, the Contractor shall notify the Contracting Officer in writing as soon as the condition is known

- **Clause H.15, Evaluation of Subcontracting Plan**
  - Small Businesses – 10.5%
  - Small Disadvantaged Business Concerns – 4.0%
  - Women-Owned Small Business Concerns – 2.5%
  - Historically Underutilized Business Zone (HUBZone) Small Business Concerns – 0.5%
  - Veteran-Owned Small Business Concerns – 0.5%
  - Service-Disabled Veteran-Owned Small Business Concerns – 0.3%
  - Historically Black College or University and Minority Institution (HBCU/MI) – 0.2%

NRA Model Contract

- **Clause H.16, Advanced Agreement in Rights in Data**
  - To be proposed by Offeror
  - Clause will contain Contractor and Subcontractor Unlimited Rights, Limited Rights, and Restricted Rights
  - Constitutes an advanced agreement between the Government and the Contractor regarding the interpretation of clause FAR 52.227-14, Rights in Data—General, Alternates II and III

- **Clause H.18, SAE/AS9100 Compliance**
  - Comply with SAE/AS9100
  - Third-party certification/registration is not required

- **Clause H.19, NASA Facilities, Equipment, and Services and executed Space Act Agreements**

NRA Model Contract

- **Section I - The following clauses are listed as full text for convenience:**
  - Rights in Data – General (52.227-14) (Dec 2007)
  - Additional Data Requirements (52.227-16) (Jun 1987)
  - Payments Under Fixed-Price Research and Development Contracts (52.232-2) (Apr 1984)
  - Limitation on Withholding of Payments (52.232-9) (Apr 1984)
  - Changes – Fixed-Price (52.243-1) (Aug 1987) – Alternate V (Apr 1984)
  - Termination for Convenience of the Government (Fixed-Price) (52.249-2) (May 2004)
  - Default (Fixed-Price Research and Development) (52.249-9) (Apr 1984)

NRA Model Contract

Section J - List of Attachments - NASA PROVIDED

- Attachment J-2, Data Procurement Document/Data Requirements (additional data provided later in this presentation)
  - Offeror may propose modifications
- Attachment J-3, Applicable and Reference Documents (no applicable documents identified)
- Attachment J-9, Contract Funding – TBD at award
- Attachment J-10, Meeting and Review Requirements; Assessment of Contractor Performance

NRA Model Contract

- **Section J - List of Attachments - OFFEROR PROPOSED**
  - **With initial submission:**
    - Attachment J-1, Statement(s) of Work
    - Attachment J-4, Work Breakdown Structure
    - Attachment J-5, Subcontracting Plan
      - Small Business Plan
      - Cooperative Agreements
      - Enhanced Use Lease Agreements
      - Space Act Agreement(s)
  - **If selected for award:**
    - Attachment J-6, Safety, Health, and Environmental (SHE) Plan
      - See Model Contract Clause H.2 for Interrelationship and Data Requirement SA-001 – To be tailored
    - Attachment J-7, Organizational Conflict of Interest Avoidance Plan
      - See Model Contract Clause I-16, Access to Sensitive Information for Interrelationship and reference library for content information in STD/MA-OCI
    - Attachment J-8, IT Security Management Plan
      - See Model Contract Clause I.13, Security Requirements for Unclassified Information Technology Resources for Interrelationship
  - **Additional Information: The reference folder in the library contains information on submittal content for Technology Reports FAR 52.227-11 and NFS 1852.227-70**

NRA Model Contract

Attachment J-10, Meeting and Review Requirements; Assessment of Contractor Performance

- **Minimum performance requirements identified (in addition to DPD)**
- **Performance Requirements defined for tasks**
  - Maximum Allowable Incident Rate (MAIR)*
  - Reduction Methodology
  - Recapture of Reduced Milestone Payments

Requirement	Performance Standard	MAIR*	Method of Surveillance	Weight	Deduction % Milestone Payment
1.0 Submission of Reports and Data	The Contractor shall assure the timely and accurate submission of required deliverables in accordance with the DPD	Incidents include but are not limited to each delinquent or unacceptable deliverable	Review of Deliverables	25%	10% Maximum
2.0 Failure to make adequate progress as reflected in the Contractor's program/project schedules or COR/CO review	The Contractor shall assure scheduled milestones/tasks are on-time or within two weeks of baseline	Incidents include but are not limited to each late milestone	Review of Contractor's progress	75%	

NRA Data Procurement Document (DPD)

- **Key Concepts**
  - Offeror Can Propose Modifications to DPD
  - Affordability Plan is requested with Proposal and shall be evaluated
  - SHE Plan to be provided by Offeror(s) selected for award no later than 30 days after award
  - Monthly Progress Reports, Demonstration/Test Plan, and Final Report are Key Deliverables
- **Data Requirements List (DRL)**

DRD	DATA TYPE	TITLE	OPR
DE-001	2	Test/Demonstration Plan	XP10
MA-001	3	Monthly Progress Report	XP10
MA-002	1	Final Management and Technical Report	XP10
MA-003	3	Program/Project Schedules	XP10
MA-004	2	Affordability Plan	XP10
SA-001	2	Off-site Safety, Health, and Environmental (SHE) Plan	AS10/QD12
SA-002	3	Mishap and Safety Statistics Reports	QD12

NRA – Selection and Award Process

- STEP 1: The Selection Official will make a determination for selection
- STEP 2: The Offeror is informed of a total or partial award or non-award
- STEP 3: The Offeror is to submit additional information as specified by the Contracting Officers notification of selection
  - Section 4 of the NRA: Additional Price Requirements if Selected for Award
  - Model Contract Attachments - Organizational Conflict of Interest Avoidance Plan and IT Security Management Plan
  - Start tailoring of DR for Off-site Safety, Health, and Environmental (SHE) Plan
- STEP 4: Negotiation with selected Offeror, as appropriate
- STEP 5: Award if successfully negotiated to selected Offeror

Precedence

The posted NRA takes precedence over any discrepancies or inconsistencies noted between this presentation and the NRA.

Questions and Answers